Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

BRIEFER ARTICLES.

PHOTOGRAPHY IN BOTANY AND IN HORTICULTURE.

(WITH TWO FIGURES)

ALMOST every working scientist knows something about photography, and probably no one will deny that a camera is one of the indispensable equipments in every well-regulated botanical or horticultural laboratory. Yet a casual acquaintance among various horticulturists and botanists, and the repeated publication of unnecessarily inadequate (not to say atrociously bad) photographs, lead us to believe that the use of the camera in horticultural and botanical work will bear some discussion. We are convinced that the value of the camera as a piece of scientific apparatus is not generally appreciated. We believe that the camera is not used as often as it ought to be, and we believe yet more strongly that the photographic methods with which many science workers content themselves are not really creditable. We believe that as a help in daily work, the camera ranks next to the microscope for the botanist, and far above the microscope for the horticulturist. Yet while every laboratory has a row of books on microtechnique, and while every botanist and most horticulturists work hard to perfect themselves in microscopical methods, a book on photography is a rarity, and men are satisfied to blunder along with almost any sort of a camera, and with plates and developers of which they know practically nothing. Some even are willing to "press the button" and let some company in another state "do the rest."

In the matter of photographing plants, fruits, flowers, and similar objects,[1] we may perhaps offer a few observations as the result of experiments covering several years.

The particular piece of apparatus required for this sort of work is some support which will hold the camera approximately in a vertical position, and will provide a transparent horizontal shelf some distance from the floor. The objects are laid on the latter and the camera is focused down upon them.

---

[1] "Photographing flowers and trees," *The Photo-Miniature*, No. 13, April 1900.

Any sort of construction which provides for the vertical camera and the horizontal shelf will answer, and several different forms are actually in use. *Fig. 1* is sketched from a photograph of the apparatus in use at the Vermont Experiment Station. *Fig. 2* shows a more elaborate form, designed by Mr. McFarland and used at the Mt. Pleasant Printery. The construction will be obvious in either case, and may be modified to suit individual needs. Lightness, rigidity, and portability are the chief requirements in an apparatus for field use; while in the studio the permissible increase of weight makes a somewhat more convenient construction available. *Fig. 2* is especially a studio camera-stand, adaptable for both vertical and horizontal work, making lantern slides, enlargements, etc.

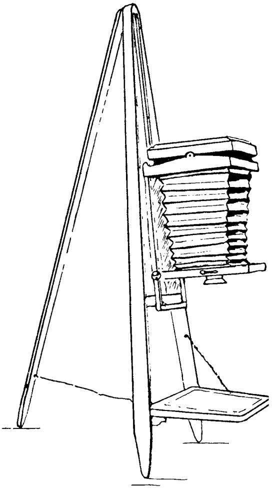

FIG. 1.

The advantages of such an apparatus are: (1) It does away with nearly all trouble in arranging the subject. Simply lay a plant, some flowers, specimens of fruit, or other objects on the glass shelf, and they stay where they are put. In the case of fruits, which will not always lie where wanted, one should have at hand a supply of rubber hose-washers, *i. e.*, rubber rings 3–4^{cm} in diameter. Set the fruit into the ring, and it may be moved anywhere and put in almost any position. (2) It allows one to arrange any background desired. Sheets of cardboard in white, black, and neutral tints may be successively tried behind the subject and the best one chosen. (3) It does away with shadows which are almost inevitable and frequently disastrous in any other method of plant photography. (4) It facilitates considerably the work of making exact size photographs of objects. For all sorts of floral and fruit photography it is much the best way to have all photographs (with a few necessary exceptions) made exact size. This is especially desirable when one begins to have a collection of negatives numbering into the thousands.

For comfortable plant, flower, vegetable, or fruit photography in full natural size, a camera with considerable bellows extension is essential. To obtain a natural size image the lens must be equidistant between the object and the ground glass of the camera at twice its focal length. Thus, if for a plate of 6½ × 8½ inches a lens of 7½ inches focal length be used, sufficient bellows must be at hand to permit the ground glass to be fixed at 15 inches from the objective. The modern "long-focus" cameras provide very fully for this need and others which will appear upon trial. The best work will be possible if a lens is chosen of rather short focal length, one technically known as a "wide-angle" lens. Not only is the range of the camera thus increased, but the sharp focus over a considerable depth which is absolutely requisite in morphological work is far more easily obtained.

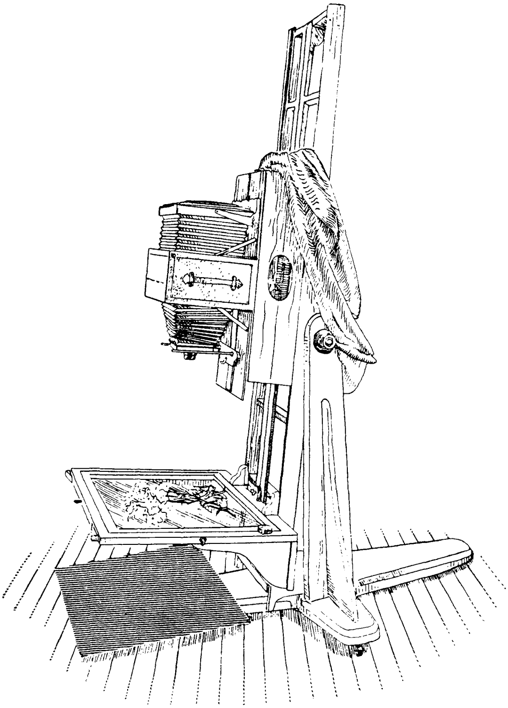

FIG. 2.

In focusing, it will be found a decided advantage to select a spot in the object or composition upon the glass shelf a little above its vertical center, and there to affix temporarily a white card or paper with fine lines. An ordinary visiting card is excellent. When this is focused upon, and the lens then "stopped down," the whole object will be sufficiently sharp. We urge extreme care and cleanliness in all photographic operations. In working full size, dust is a great enemy; every grain is willing to be photographed.

A skylight is most undesirable for vertical photography, because of the reflections upon the glass platform. Indeed, the worker will find it almost essential to guard against reflections from the skylight, the ceiling of a light room, and particularly from the polished camera front and lens, by preparing a wire frame or hood, covered with black velvet or the like, and extending about the camera so as to cut off the immediate top light.—F. A. WAUGH and J. HORACE McFARLAND.